

# COPS Weather Summary

15 August 2007

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Valid: Wednesday 15 August 09:45 UTC to Monday 19 August 00:00 UTC

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## Synoptic Overview

An intense upper long-wave trough is present over western Europe, with the associated cold front analyzed to stretch from the central Biscay across northwestern France into the western Benelux. This system will move slowly eastward, across the COPS region late Wednesday night, and curve from the Baltic States southwestwards into the Alpine region, where the front will stall. This results in the polar post-frontal air over the COPS area being rather shallow, though showers will still be possible.

## Analysis and Forecast of Synoptic Controls in the COPS Region

### Wednesday 15 August

The picture has not changed much compared to yesterday's. The cold front should cross the Rhine Valley around 00 UTC. Ahead of this front, some CAPE is expected to develop, albeit not very much owing to weak mid-level lapse rates. However, it should be sufficient to maintain deep convection. Model consensus develops convection around 18 UTC or even a bit later. Current thinking is that thunderstorms will initiate around 18 UTC in the western COPS region and spread eastwards. Shear profiles remain favorable for rapid severe evolution, including a few supercells, main severe threats being damaging wind gusts along with some large hail. Strong low-level shear and ample low-level moisture should support low-level rotation of any supercell that forms, resulting in some threat for a brief tornado or two. However, given somewhat weak CAPE it is currently not expected that storms will grow into large MCSs.

Along the main convergence line associated with the cold-frontal boundary, additional storms should form, which may be organized more linearly, given strong linear low-level forcing. Uncertainty exists about how well the storms will survive along the front through the night. However, the above-mentioned strong large- and mesoscale forcing for upward motion could sustain the convective system through the night. This system would pose mainly a threat for strong/severe wind gusts.

### Thursday 16 August

The main weather phenomenon on Thursday will be rain. There may be weak, elevated convection embedded in this rain, maybe capable of isolated lightning, but the main mode will be stratiform rain. Late in the afternoon/evening, the rain should gradually weaken and finally cease.

### Friday 17 August

Mid- and upper level cloudiness should persist, but surface-based convection should develop in the morning hours, gradually increasing in depth. Based on the past GFS runs, it appears likely that the top of the convectively-mixed layer will be around the 500 hPa level. This will be sufficiently deep for scattered rain showers and isolated/weak thunderstorms.

### Saturday 18 August

It seems that convection will remain too shallow to precipitate, so that it should stay mostly dry.

### Sunday 19 August

After some morning fog, convective clouds should form towards midday, and evolve into scattered showers and isolated thunderstorms. Activity should diminish after loss of daytime heating.

## Extended Outlook

Chance of further thunderstorms over the COPS domain should persist until late Tuesday. Thereafter, more stable conditions are expected with an eastward expansion of an Atlantic high-pressure system.

**Today, Wednesday 15 August**

Time/location of first convective cloud development	Scattered fields of altocumulus during the day. Isolated to scattered cumulus from the mid-morning onward.
Time/location of convective storm initiation	Convective storm development is expected around 18 UTC, most likely over the Vosges, but not ruled out over the Black Forest either.
Mode/coverage/evolution	A few small storm clusters developing in the evening, possibly including a few supercells.
Convective cloud base	Rising to around 1500 - 2000 m.
Storm motion	To the NE at 15-20 m/s.
Maximum temperature	Up to 33°C
Precipitation	Dry until midnight in some places, under storms up to 30 mm locally.
Severe weather threat	Moderate to high. Some large hail, and especially strong winds are likely with the storms. An isolated tornado cannot be excluded either.

**Tomorrow, Thursday 16 August**

Time/location of first convective cloud development	Some stratiform precipitation with embedded convection ongoing. During the day partly clear skies coming in from the southwest, with shallow convective clouds.
Time/location of convective storm initiation	
Mode/coverage/evolution	
Cloud base	500-800 m.
Storm motion	-
Maximum temperature	Up to 23°C
Precipitation	up to 35 mm locally.
Severe weather threat	Low

**Friday 17 August**

Time/location of first convective cloud development	Stratiform cloudiness may prevent convective development especially over the east of the COPS area early in the day. Scattered showers and isolated, weak thunderstorms will likely develop from late morning onward.
Time/location of convective storm initiation	
Mode/coverage/evolution	
Cloud base	Around 500 m.
Storm motion	-
Maximum temperature	Up to 23°C
Precipitation	5-10 mm, locally up to 20 mm.
Severe weather threat	Low

**Saturday 18 August**

Time/location of convective storm initiation, Mode/coverage, Evolution	Development of convective clouds, but too shallow to pose much of a threat for rain showers.
Maximum temperature	Up to 23°C
Precipitation	Mostly dry.
Severe weather threat	Low

### Sunday 19 August

Time/location of convective storm initiation, Mode/coverage, Evolution	A few showers developing during the day after local fog and mist have dissolved.
Maximum temperature	Up to 26°C
Precipitation	Up to 10 mm locally.
Severe weather threat	Low

### Suggestions for IOP's and down days

A few strong storms are expected during Wednesday evening and the night to Thursday, mostly over western and later central parts of the COPS domain. Hence, an IOP is advised that continues into Thursday morning. For Friday showers up to around 6 km AGL are forecast. Given that the BAe aircraft will be available for operations, this appears to be an almost perfect day for fulfilling their mission of probing deep convective clouds. For Saturday the models do not produce significant so that an IOP is not recommended. Sunday only a few weak showers are forecast, which should be only marginally interesting.